**IT WORKSHOP**

**Week1**

Basic Unix commands

**Week2**

### sed, grep, sort, ssh,awk,shutdown,ftp,service,chown,chmod

**Week3**

**Latex:Introduction,** Document Structure,Essentials ,Troubleshooting Creating a Title, Sections ,Labelling,Table of Contents.

**Typesetting Text:** Font Effects, Coloured Text ,Font Sizes ,Lists ,Comments & Spacing,Special Characters.

**Week4**

**Tables, Figures**

**Equations:** Inserting EquationsMathematical Symbols,Practical

**Inserting References:** Introduction,The BibTeX file ,Inserting the bibliography,Citing references,Styles,Practical

**Week5**

### Introduction to PHP

### Declaring Variables,Data types, Arrays, Strings,Operators,Expressions,Control Structures, Functions, Reading data from Web forms,

**Week6**

### Handling file uploads,Connecting to database (MySQL), Executing Sample Queries, Handling Results, Handling Sessions and Cookiess

**Week7**

**The NumPy array object**

What are NumPy and NumPy arrays, Creating arrays, Basic data types, Basic visualization, Indexing and slicing, Copies and views, Fancy indexing

**Numerical operations on arrays**

Elementwise operations, Basic reductions, Broadcasting, Array shape manipulation, Sorting data

**Week8**

**Matplotlib: plotting**

Introduction, Simple plot, Figures, Subplots, Axes and Ticks, different types of Plots: examples and exercises

**Week9**

**Image manipulation and processing using Numpy and Scipy**

Opening and writing to image files,Displaying images, **Basic manipulations**- Statistical information, Geometrical transformations, I**mage filtering –** Blurring/smoothing, Sharpening, Denoising, Mathematical morphology, **Feature extraction**- Edge detection, Segmentation

**Week10**

**High-level scientific computing**

File input/output, Special functions, Linear algebra operations, Interpolation: scipy.interpolate, Optimization and fit, Statistics and random numbers

**Week 11**

**High-level scientific computing**

Numerical integration, Fast Fourier transforms, Signal processing, Image manipulation

**Week12**

**Statistics in Python**

Data representation and interaction, [Hypothesis testing: comparing two groups,](https://scipy-lectures.org/packages/statistics/index.html#hypothesis-testing-comparing-two-groups)[Linear models, multiple factors, and analysis of variance,](https://scipy-lectures.org/packages/statistics/index.html#linear-models-multiple-factors-and-analysis-of-variance) [More visualization: seaborn for statistical exploration](https://scipy-lectures.org/packages/statistics/index.html#more-visualization-seaborn-for-statistical-exploration)